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Observations of Phenomena of Jupiter's Satellites, made at the University Observatory, Durham, in the Year 1882. By G. A. Goldney.

(*Communicated by the Rev. Professor Farrar, D.D.*)

Day of Observation.	Satellite.	Phenomenon.		Power.	G.M. Solar Time of Observation.	G.M. Solar Time of N.A.
					h m s	
Jan. 7	III.	Tr. Ingr.	First contact	195	6 29 37	6 32
			Bisection	,,	6 32 47	
			Last contact	,,	6 38 12	
7	I.	Tr. Egr.	First contact	,,	10 37 2	10 40
			Bisection	,,	10 39 2	
			Last contact	,,	10 40 32	
7	II.	Ecl. R.	First seen	,,	12 24 20·3	12 24 30
17	I.	Ecl. R.	First seen	,,	5 27 36·8	5 27 36
			Full brightness	,,	5 29 25·3	
22	I.	Occ. D.	First contact	,,	9 24 5	9 26
			Bisection	,,	9 25 35	
			Last seen	,,	9 26 40	
22	I.	Ecl. R.	First seen	,,	12 54 45·3	12 54 30
			Full brightness	,,	12 57 9·3	
23	I.	Tr. Ingr.	First contact	,,	6 38 12	6 39
			Bisection	,,	6 39 49	
			Last contact	,,	6 42 16	
23	II.	Tr. Ingr.	First contact	,,	7 9 3	7 16
			Bisection	,,	7 11 13	
			Last contact	,,	7 14 38	
23	I.	Tr. Egr.	Bisection	135	8 51 38	8 51
			Last contact	,,	8 53 48	
23	II.	Tr. Egr.	Bisection	,,	9 50 13	9 54
			Last contact	,,	9 52 58	
24	I.	Ecl. R.	First seen	195	7 23 38·2	7 23 33
			Full brightness	,,	7 25 30·2	
Feb. 1	III.	Occ. D.	First contact	,,	7 32 2	7 45
			Bisection	,,	7 36 32	
			Last seen	,,	7 41 2	
	II.	Occ. D.	First contact	500	6 49 1	6 52
			Bisection	,,	6 51 31	
			Last seen	,,	6 54 21	
8	I.	Tr. Egr.	First contact	,,	7 6 1	7 8
			Bisection	,,	7 7 26	
			Last contact	,,	7 9 11	

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Day of Observation.	Satellite.	Phenomenon.		Power.	G.M. Solar Time of Observation. h m s	G.M. Solar Time of N.A.
Feb. 15	I.	Tr. Ingr.	First contact	195	6 50 36	6 52
			Bisection	,,	6 53 6	
			Last contact	,,	6 56 36	
15	I.	Tr. Egr.	Bisection	,,	9 4 41	9 5
			Last contact	,,	9 6 26	
15	II.	Occ. D.	First contact	,,	9 23 1	9 29
			Bisection	,,	9 25 11	
			Last seen	,,	9 27 36	
16	I.	Ecl. R.	First seen	,,	7 40 19·8	7 40 20
			Full brightness	,,	7 41 30·8	
19 (*a*)	III.	Tr. Egr.	Bisection	270	8 5 35	8 8
			Last contact	,,	8 8 15	
Mar. 3 (*b*)	II.	Tr. Ingr.	First contact	,,	9 48 6	9 54
			Bisection	,,	9 51 6	
			Last contact	,,	9 52 41	
5 (*c*)	II.	Ecl. R.	First seen	,,	9 13 55·5	9 12 56
16	III.	Occ. D.	First contact	195	8 39 25	8 44
			Bisection	,,	8 41 25	
			Last seen	,,	8 43 10	
21	II.	Tr. Egr.	Bisection	,,	7 26 55	7 29
			Last contact	,,	7 29 15	
26 (*d*)	I.	Tr. Egr.	First contact	135	7 57 11	7 59
			Bisection	,,	7 59 31	
			Last contact	,,	8 2 41	
Nov. 11	I.	Tr. Ingr.	First contact	380	9 35 20	9 37
			Bisection	,,	9 36 14	
			Last contact	,,	9 37 53	
11	I.	Tr. Egr.	First contact	,,	11 45 59	11 52
			Bisection	,,	11 48 38	
			Last contact	,,	11 50 37	
12 (*e*)	I.	Occ. R.	Last contact	,,	8 59 34	8 59
17	I.	Ecl. D.	First diminution	270	13 17 56·6	13 20 33
			Fading rapidly	,,	13 18 42·6	
			Last seen	,,	13 20 39·6	
25 (*f*)	I.	Tr. Ingr.	First contact	,,	13 4 23	13 7
			Bisection	,,	13 6 12	
			Last contact	,,	13 8 26	

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Day of Observation.	Satellite.	Phenomenon.		Power.	G.M. Solar Time of Observation.	G.M. Solar Time of N.A.
					h m s	
Nov. 27 (*g*)	I.	Tr. Ingr.	First contact	270	7 30 32	7 33
			Bisection	,,	7 32 17	
			Last contact	,,	7 33 42	
27	I.	Tr. Egr.	First contact	,,	9 45 37	9 48
			Bisection	,,	9 47 17	
			Last contact	,,	9 49 2	
28 (*h*)	II.	Occ. R.	Bisection	,,	6 53 53	6 55
			Last contact	,,	6 55 58	
30 (*i*)	II.	Ecl. D.	First diminution	,,	9 48 17·1	9 53 43
			Last seen	,,	9 52 12·1	
Dec. 10	III.	Tr. Ingr.	First contact	,,	7 59 35	8 6
			Bisection	,,	8 4 30	
			Last contact	,,	8 8 59	
10	III.	Sh. Egr.	First contact	,,	9 47 30	9 56
			Bisection	,,	9 50 35	
			Last contact	,,	9 54 15	
10	II.	Tr. Ingr.	First contact	,,	10 31 30	10 42
			Bisection	,,	10 36 45	
			Last contact	,,	10 43 0	
10	I.	Ecl. D.	First diminution	,,	13 29 42·5	13 31 44
			Last seen	,,	13 31 51·5	
11	I.	Tr. Ingr.	First contact	,,	10 57 17	11 0
			Bisection	,,	10 58 54	
			Last contact	,,	11 1 6	
11	I.	Tr. Egr.	First contact	,,	13 10 7	13 15
			Bisection	,,	13 11 57	
			Last contact	,,	13 14 8	
21	I.	Ecl. R.	First seen	,,	6 35 1·7	6 34 51
			Full brightness	,,	6 36 57·7	
23	II.	Tr. Ingr.	First contact	380	11 28 16	11 32
			Bisection	,,	11 30 37	
			Last contact	,,	11 33 30	

Remarks.

(*a*) Very bad definition.
(*b*) Images blurred; very bad definition.
(*c*) Rain falling; cloudy after.
(*d*) Excessively bad definition.
(*e*) Bad definition.
(*f*) Through thin cloud. Images very blurred.
(*g*) Very tremulous.
(*h*) Cloudy; images very bad.
(*i*) Thin cloud; hazy.

The observations were all made with the Fräunhofer Equatorial, with an aperture of $6\frac{3}{8}$ inches.

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Note upon the Longitudes of Madras, Singapore, and Batavia.

By Prof. J. A. C. Oudemans.

(*Communicated by J. R. Hind, F.R.S.*)

This summer I have at last received from Mr. Norman Pogson not only the necessary numbers for deducing the difference of longitude of Madras and Singapore, telegraphically determined by us in July 1871, but also the deduction of that longitude itself. My own calculation coincides wholly with his.

By proposing to Mr. Pogson the determination of the above-named difference of longitude, I intended to obtain a telegraphic longitude of Batavia as soon as the longitude of Madras should be telegraphically determined; the difference Batavia-Singapore having been determined already by me and Mr. Soeters half a year before.

I have now prepared a report on that determination, to be presented to the Dutch Colonial Government, and have sent a more detailed abstract of it to the editor of the *Astronomische Nachrichten*, so I will content myself with mentioning here only the result, viz. Singapore (flagstaff on Government Hill), east of Madras (Meridian Circle) $1^{\rm h}\ 34^{\rm m}\ 23^{\rm s}{\cdot}635$, and to add that the personal equation between Mr. Pogson and myself has not been determined, so that it remains in the result.

The longitude of Madras formerly adopted in the *Nautical Almanac* was $5^{\rm h}\ 20^{\rm m}\ 57^{\rm s}{\cdot}3$, but in that of 1882 it appears for the first time as $5^{\rm h}\ 20^{\rm m}\ 59^{\rm s}{\cdot}4$, the "Explanation" printed after the *Almanac* not explaining this change. As this number is less by 0′·25 than that communicated by General Addison in the *Monthly Notices* of December 1877, I asked Mr. Hind for some information about the origin of the number in the *Nautical Almanac*. He most willingly answered me that the new longitude of Madras was communicated to him by Sir George Airy in a letter of 1878, January 25:—

		h	m	s
Transit of *Venus.*	Mokattam, East of Greenwich ...	2	5	6·320
	Suez, East of Mokattam ...	0	5	6·917
Indian Officers.	Aden, East of Suez	0	49	42·656
	Bombay, East of Aden ...	1	51	19·983
	Madras, East of Bombay ...	0	29	43·540
	Madras, East of Greenwich ...	5	20	59·416

and added, for further information, the following extract from Sir George Airy's letter:—

"Colonel Walker requests me to transmit to you for insertion (if you see no objection) in the *Nautical Almanac* the following determination of the longitude of Madras by telegraphic operations. The necessary observations were made by Captains W.